IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Hirofumi Ito et al.

Application No.: 10/595,622 — Confirmation No.: 3648

Filed: June 8, 2006 — Art Unit: 1793

For: CATALYST, PROCESS FOR PREPARING THE CATALYST AND PROCESS FOR PRODUCING LOWER HYDROCARBON USING THE CATALYST — Examiner: Elizabeth D. Wood

DECLARATION PURSUANT TO 37 CFR §1.132

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sirs:
I, Atsushi Okita, hereby declare as follows:

I am a citizen of Japan and over 21 years of age. I am a graduate of Tokyo Institute of Technology, located on 4529 Nagatsuda, Midori-ku, Yokohama, Kanagawa, Japan and received a degree in Catalyst Chemistry from the Department of Environmental Chemistry and Engineering. I have been employed by JGC Corporation since April 01, 2005 and I have been conducting research in the field of olefin catalysts for five (5) years. I have reviewed the Office Action mailed January 13, 2010 and the references cited therein. It is my understanding that the Examiner has rejected the claims of the application based on his belief that combining the teachings of Japanese Laid-Open Patent Application No. 61-58812 with U.S. Patent No. 4,544,793 to Okado.

I have conducted experiments which demonstrate that the features of the present invention differ significantly from the features obtainable by the techniques disclosed by the Japanese Laid-Open Patent Application No. 61-58812 patent in combination with and U.S. 4,544,793 to Okado. In fact, these experiments demonstrate that the catalyst of the

present invention cannot be produced from the combination of Japanese Laid-Open Patent Application No. 61-58812 ('812 patent) and US 4,544,793 to Okado.

Attached FIG 1, provides a transmission electron microscope photograph of the zeolite hazing a particle size of approximately 1μ as described in the previously filed experimental reports. The measurement was performed using a sample that was thinly cut so as to expose the interior of the particle. An elemental analysis was undertaken at determined points (Nos 1-8) of the interior of the zeolite. The resulting analysis shows that the resulting zeolite from the process as described in the present invention results in Ca in the amount of 1.2% or more distributed uniformly throughout the interior of the zeolite. See Table 1.

Attached FIG 2, provides a transmission electron microscope photograph of the zeolite hazing a particle size of approximately 200nm and as the result of mixing H-ZSM-5, boehmite, calcium carbonate with water sich tha the weight ratio of H-ZSM-5; alumina; calcium carbonate should be 80:20:5, then drying the resultant mixture at 120 °, thereafter firing the mixture at 550°C for 5 hours. The measurement was performed using a sample that was thinly cut so as to expose the interior of the particle. An elemental analysis was undertaken at determined points (Nos 1-6) of the interior of the zeolite. The resulting analysis shows that Ca was not present at any points in the interior of the szeolite. See Table 2.

These results conclusively demonstrate that Ca was introduced uniformly into the interior of the zeolite catalyst when the seed crystals are mixed with a Ca source prior to hydrothermal treatment. This result is not found in the comparative examples.

I further declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements are made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under § 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the instant application or any patent issued thereupon.

July 12, 2011
Date

Atsushi Okita
Atsushi Okita

Appendix A

Observation about the result of the experimentation

FIG. 1 is a transmission electron microscope photograph of zeolite having particle size of approximately 1μm of Example 1.

Since the measurement was performed using a sample which was cut thinly, the interior of the zeolite particle is shown in the photograph (Note: The boundary between the part where nothing is taken and the zeolite particle is the surface of the zeolite particle.).

An elemental analysis result with respect to points of Nos. 1 to 8 of the interior of the zeolite particle is shown in Table 1.

These data show that in all of points, Ca amount is 1.2 wt.% or more, and that Ca is introduced uniformly into the interior of the zeolite.

FIG. 2 is a scanning transmission electron microscope photograph of the zeolite particle part having diameter of approximately 200 nm of the catalyst which was obtained by mixing H-ZSM-5, boehmite, calcium carbonate with water such that the weight ratio of H-ZSM-5 : alumina : calcium carbonate should be 80:20:5, then drying the resultant mixture at 120°C, thereafter firing the mixture at 550°C for 5 hours. This experiment seeks to produce a catalyst similar to that described in an obvious combination of the cited prior art. Since the measurement was performed using a sample which was cut thinly, the interior of the zeolite particle is shown in the photograph (Note: The boundary between the part where nothing is taken and the zeolite particle is the surface of the zeolite particle.).It is alumina that bond to the zeolite particle surface. An elemental analysis result with respect to points of Nos. 1 to 6 of the interior of the zeolite particle is shown in Table 2.

These data show that in all of points, Ca was not detected, and that Ca was not introduced into the interior of the zeolite.

These results demonstrate that Ca was introduced uniformly into the interior of the zeolite fine particles which were obtained by adding Ca to raw materials before hydrothermal synthesis (Example 1), whereas Ca was not introduced into the interior of the zeolite particles which were obtained by adding Ca to fine particles of H-ZSM-5 afterward.

Fig.1

Table 1

No.	Si [wt%]	Al [wt%]	Ca [wt%]
1	92.46	4.83	2.71
2	93.90	4.51	1.59
3	94.78	3.61	1.61
4	94.55	4.10	1.35
5	93.43	4.80	1.77
6	94.73	3.98	1.29
7	94.87	3.76	1.37
8	95.24	3.55	1.21

Fig.2

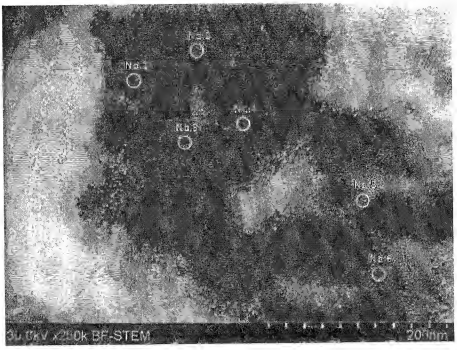

Table 2

No.	Si [wt%]	Al [wt%]	Ca [wt%]
1	91.16	8.84	0.00
2	94.41	5.59	0.00
3	93.54	6.46	0.00
4	92.71	7.29	0.00
5	93.81	6.19	0.00
6	94.48	5.52	0.00